



# PATENT SPECIFICATION

NO DRAWINGS

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## COMPLETE SPECIFICATION

### Cocoa Compositions

5 We, AMERICAN CYANAMID COMPANY, a corporation organised and existing under the Laws of the State of Maine, United States of America, of Berdan Avenue, Township of Wayne, State of New Jersey, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to cocoa compositions and processes for their preparation.

The invention is based upon our discovery that dioctyl sodium sulfosuccinate is useful in preparing cocoa compositions having improved qualities of dispersion.

Thus, in accordance with one aspect, the present invention provides a cocoa composition of improved dispersibility, comprising cocoa in admixture with at least 0.025% by weight of dioctyl sodium sulfosuccinate, based on the weight of the cocoa.

20 In accordance with a further aspect, the invention provides a process for the preparation of a cocoa composition of improved dispersibility, comprising intimately admixing cocoa and dioctyl sodium sulfosuccinate in amount sufficient to provide a concentration of at least 0.025% by weight, based on the weight of the cocoa.

25 The concentration of dioctyl sodium sulfosuccinate employed in the present invention is, as hereinabove stated, based on the weight of the cocoa; furthermore, the particular concentration employed is dependent on a variety of factors, the most significant of which appears to be the fat content of the particular cocoa utilized in the composition. It has been observed that with particular low fat cocoas effective dispersion is achieved by employing concentrations as low as 0.025%; whereas, particular high fat cocoas require a concentration of at least 0.01%. In addition to the fat content of cocoa, other factors determinative of concentration are taste and cost of

materials. Taste constitutes an important factor to be considered, since dioctyl sodium sulfosuccinate has an inherently bitter taste. The absence or presence of particular optional ingredients in the formulation such as flavoring agents, as well as the fat content of the cocoa, since the fat possesses a flavoring effect in addition to its effect on dispersion, will govern the concentration employed. Cost of materials also constitutes a factor to be considered, since at certain effective levels of concentration an increase will not materially enhance dispersibility to the degree necessary to warrant the added cost. Therefore, the necessity of resorting to the open ended recitation of concentration, that is, at least 0.025%, is deemed to be warranted, since the upper limitations of concentration cannot be defined with a reasonable degree of particularity. However, the concentration will usually be within the range of from 0.025 to 1%, particularly in the range of 0.05 to 0.8%. The preferred concentration is from 0.1 to 0.8%, more particularly 0.4%.

30 The process of preparing the cocoa composition of the present invention involves the intimate admixture of cocoa and dioctyl sodium sulfosuccinate. The intimate admixture of cocoa and dioctyl sodium sulfosuccinate may be achieved by adding a dilute solution of dioctyl sodium sulfosuccinate in a solvent such as alcohol or water to cocoa, particular care being taken not to excessively moisten the cocoa. In addition, care must be exercised in the choice of solvents, since a fat solvent adversely effects dispersibility by causing migration of the fat content of cocoa to the surface of the cocoa particles.

35 The dispersion mediums which may be employed to disperse the cocoa composition of the present invention are generally those utilized in preparing reconstitutable chocolate drink compositions such as water and milk. Sweetening agents such as any sugar or non-nutritional artificial sweetening agent may be included in the cocoa composition of this in-

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vention. Illustrative of the sweetening agents which may be employed are sucrose, sodium cyclamate, and mixtures of sodium cyclamate and saccharin.

5 The advent of the present invention results in many beneficial advantages, particularly in the utilization of the composition of the present invention in reconstitutable chocolate drink compositions. Reconstitutable chocolate drink  
10 compositions containing the cocoa composition of the present invention are readily dispersible without resorting to the expensive expedient of granulation, as well as obviating the necessity of incorporating  
15 sugar in the formulation. Therefore, the advent of the present invention enables the formulation of a dietetic reconstitutable chocolate drink composition for the first time. In addition, the advent of the present invention  
20 should result in a greater utilization of high fat cocoa, which is considered to be of greater value with regard to such factors as taste and nutrition. In the past formulators have attempted to reduce the problem of agglomerate  
25 formation by employing medium and low fat cocoa, and while achieving some reduction in agglomerate formation there is also a corresponding reduction in taste and nutritional value. Therefore, the present invention  
30 enables the utilization of a high fat cocoa, in which the problem of agglomerate formation has been substantially reduced, without sacrificing taste and nutritional value.

35 The following examples illustrate the invention.

#### EXAMPLE I

##### *Preparation of a Readily Dispersible Cocoa Composition*

40 This example demonstrates the preparation of the readily dispersible cocoa composition of the present invention. Furthermore, the example demonstrates the beneficial results of

dispersibility as contrasted to untreated cocoa.

45 A 2 kg. sample of a commercially available cocoa is passed through a No. 1 screen using a comminuting machine. The cocoa is mixed for 10 minutes in a Hobart mixer with 16 ml. of a 50% w/v solution of dioctyl sodium sulfosuccinate in aqueous ethanol, diluted to 400  
50 ml. with isopropanol. The wet cocoa, which is partially balled, is passed through a No. 16 mesh (U.S. Standard) hand screen and returned to the Hobart mixer for an additional 5 minute mixing. The material is then spread  
55 on a papered tray and dried for 19 hours at 80°F. The dried cocoa is then passed through a No. 16 mesh hand screen.

The dispersibility of the above composition is then compared to a portion of the above commercially available cocoa which is  
60 untreated and serves as a control. A 20 gm. sample of the above composition is added to 200 ml. of tap water at 25°C. using a stirrer operating at 1,000 rpm. The process is repeated with the exception that the untreated  
65 cocoa powder is used. The test results in demonstrating that the cocoa composition of the present invention is completely dispersed in about 5 seconds; whereas, the control requires 40 seconds to achieve complete  
70 dispersion.

#### EXAMPLE II

##### *Utilization of the Cocoa Composition of the Present Invention in the Preparation of a Reconstitutable Chocolate Drink Composition*

75 This example demonstrates the utilization of the cocoa composition of the present invention in the preparation of a reconstitutable chocolate drink composition. Furthermore, the example demonstrates the beneficial results of dispersibility as contrasted to a granulated  
80 chocolate drink composition.

The following compositions are prepared:

	A	B
Cocoa containing 0.4% dioctyl sodium sulfosuccinate	6 gm.	7 gm.
Powdered Milk Solids	16 gm.	8 gm.
Granulated Sugar	28 gm.	35 gm.

The above compositions are prepared by employing the cocoa composition prepared in Example 1, and intimately admixing the additional ingredients.

90 The above compositions are then subjected to a test of dispersibility employing as a control a granulated chocolate drink composition. Three teaspoonfuls of each of the above

compositions and the commercially available granulated chocolate drink composition are added to three separate containers containing  
95 200 ml. of cold, 18—20°C., tap water. The times required to achieve complete dispersion with each of the compositions are set forth in the following table:

TABLE I

Composition A	20 seconds
Composition B	15 seconds
Granulated Chocolate Drink Compositions	120 seconds

5 The commercially available granulated chocolate drink composition contains powdered cocoa, non-fat dried milk solids and granulated sugar, the mixture is subjected to granulation to aid in dispersibility.

EXAMPLE III  
*Utilization of the Cocoa Composition of the Present Invention in the Preparation of a Reconstitutable Chocolate Drink Composition* 10

This example demonstrates the dispersibility of reconstitutable chocolate drink compositions in different mediums, contrasting the results to a commercially available granulated chocolate drink composition. 15

The following four compositions are prepared:

	A	B	C	D
Cocoa powder containing 4% dioctyl sodium sulfosuccinate	20%	15%	10%	10%
Granulated non-fat dried milk solids	30%	30%	30%	40%
Granulated sugar	50%	55%	60%	50%

20 The above compositions are prepared by employing the cocoa composition prepared in Example I, and intimately admixing the additional ingredients. The above percentages are by weight.

25 The four compositions are then tested with regard to dispersibility and lump formation, comparing same to a commercially available granulated chocolate drink composition. A 1-ounce sample of each of the above compositions and the granulated chocolate drink composition is added separately to a cup of cold water, cold milk, hot boiling water, and hot milk, and are stirred for approximately 20 seconds with a teaspoon. The test results in demonstrating that each of the above compositions disperses readily without lump formation; 35 whereas, the commercially available granulated

chocolate drink composition did not disperse as readily, and demonstrates extensive lump formation as the bottom of the cups which did not break up and disperse with stirring. 40

EXAMPLE IV  
*Preparation of a Reconstitutable Chocolate Drink Composition Employing An Artificial Sweetening Agent* 45

This example demonstrates the preparation of a reconstitutable chocolate drink composition in which an artificial sweetening agent is employed. Furthermore, the example demonstrates a dispersibility superior to a commercially available granulated chocolate drink composition. 50

The following composition is prepared:

Cocoa containing 0.4% dioctyl sodium sulfosuccinate	4 gm.
Salt	0.2 gm.
Artificial Sweetener*	0.25 gm.
Non-Fat Milk Solids	10 gm.

\* The artificial sweetener is composed of 12 parts sodium cyclamate and 1 part sodium saccharin.

The above composition is prepared by employing the cocoa composition prepared in Example I, and intimately admixing the additional ingredients.

- 5 The composition is then tested with regard to dispersibility and lump formation comparing same to a commercially available granulated chocolate drink composition. Three  
10 teaspoonfuls of the above composition and the granulated chocolate drink composition are added separately to a cup of cold water and cold milk, and are stirred for approximately  
15 20 seconds with a teaspoon. The test results in demonstrating that the above composition disperses readily without lump formation; whereas, the commercially available granulated chocolate drink composition did not disperse as readily, and demonstrates extensive lump  
20 formation at the bottom of the cups which did not break up and disperse with stirring.

WHAT WE CLAIM IS:—

1. A cocoa composition of improved dispersibility, comprising cocoa in admixture  
25 with at least 0.025% by weight of dioctyl sodium sulfosuccinate, based on the weight of the cocoa.

2. A composition according to Claim 1 containing from 0.1 to 0.8% by weight of dioctyl sodium sulfosuccinate, based on the weight of  
30 the cocoa.

3. A composition according to Claim 1 or Claim 2 containing also a sweetening agent.

4. A composition according to any preceding Claim dispersed in a liquid dispersing medium.

5. A process for the preparation of a cocoa composition of improved dispersibility, comprising intimately admixing cocoa and dioctyl sodium sulfosuccinate in amount sufficient to provide a concentration of at least 0.025% by weight, based on the weight of the cocoa.

6. A process according to Claim 5, wherein a solution of dioctyl sodium sulfosuccinate is added to cocoa.

7. A process according to Claim 5 or Claim 6, wherein there is added an amount of dioctyl sodium sulfosuccinate sufficient to provide a concentration of from 0.1 to 0.8% by weight, based on the weight of the cocoa.

8. A process for the preparation of a cocoa composition, substantially as described in any one of the Examples herein.

9. A cocoa composition whenever prepared by a process according to any one of Claims 5 to 8.

10. A cocoa composition according to Claim 1 and substantially as described in any one of the Examples herein.

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